US009124047B2

(12) **United States Patent**
**Kanda**

(10) **Patent No.: US 9,124,047 B2**
(45) **Date of Patent: Sep. 1, 2015**

(54) **CONNECTOR FOR A CIRCUIT BOARD**

(75) Inventor: **Hidenori Kanda**, Makinohara (JP)

(73) Assignee: **YAZAKI CORPORATION**, Tokyo (JP)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 71 days.

(21) Appl. No.: **13/808,952**

(22) PCT Filed: **Jul. 14, 2011**

(86) PCT No.: **PCT/JP2011/066078**
§ 371 (c)(1),
(2), (4) Date: **Jan. 8, 2013**

(87) PCT Pub. No.: **WO2012/008522**
PCT Pub. Date: **Jan. 19, 2012**

(65) **Prior Publication Data**

US 2013/0115787 A1 May 9, 2013

(30) **Foreign Application Priority Data**

Jul. 15, 2010 (JP) ..... 2010-160693

(51) **Int. Cl.**
***H01R 12/00*** (2006.01)
***H01R 24/50*** (2011.01)
***H01R 24/44*** (2011.01)
***H01R 13/6474*** (2011.01)

(52) **U.S. Cl.**
CPC ..... ***H01R 24/50*** (2013.01); ***H01R 13/6474*** (2013.01); ***H01R 24/44*** (2013.01)
USPC ..... **439/63**

(58) **Field of Classification Search**
CPC .. H01R 2103/00; H01R 24/50; H01R 9/0515; H01R 24/52; H01R 23/7073
USPC ..... 439/63, 581
See application file for complete search history.

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*Primary Examiner* — Abdullah Riyami
*Assistant Examiner* — Vladimir Imas
(74) *Attorney, Agent, or Firm* — Sughrue Mion, PLLC

(57) **ABSTRACT**

An inner terminal (**54**) of the present invention includes a horizontal part (C) held in an insulator part (**55**) covered with an outer terminal (**56**) and a suspending part (D) extended in a direction substantially orthogonal to the horizontal part (C) and having a lower end part connected to a signal patter of a circuit board. In the suspending piece (C) as a part opposed to one pair of side surface pieces (**56***b*) suspended and extended in the outer terminal (**56**), plate shaped impedance adjusting pieces (**54***c*) are integrally provided which respectively face the side surface pieces (**56***b*) with prescribed spaces held from the side surface pieces.

**2 Claims, 5 Drawing Sheets**

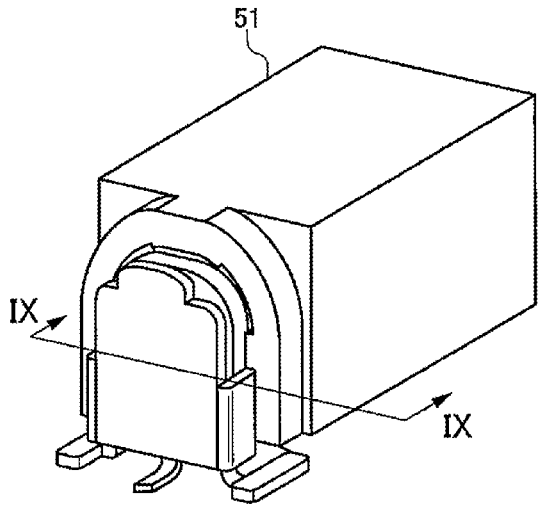

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Fig.1

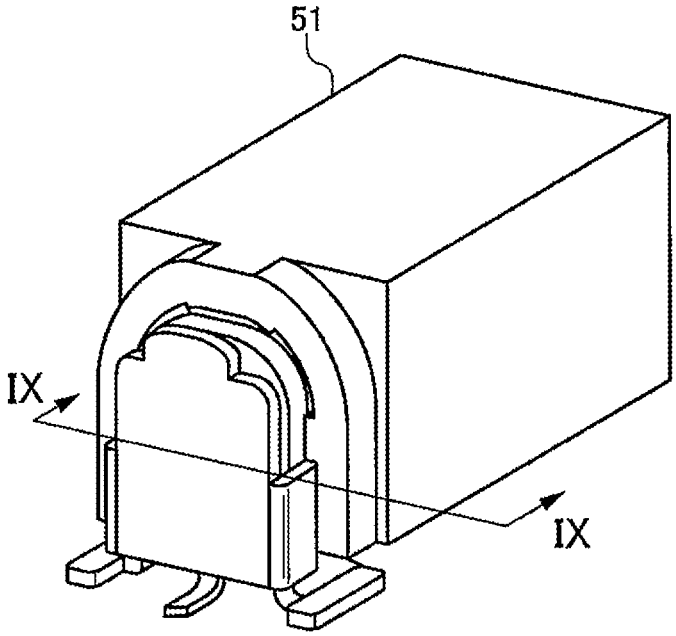



Fig.2

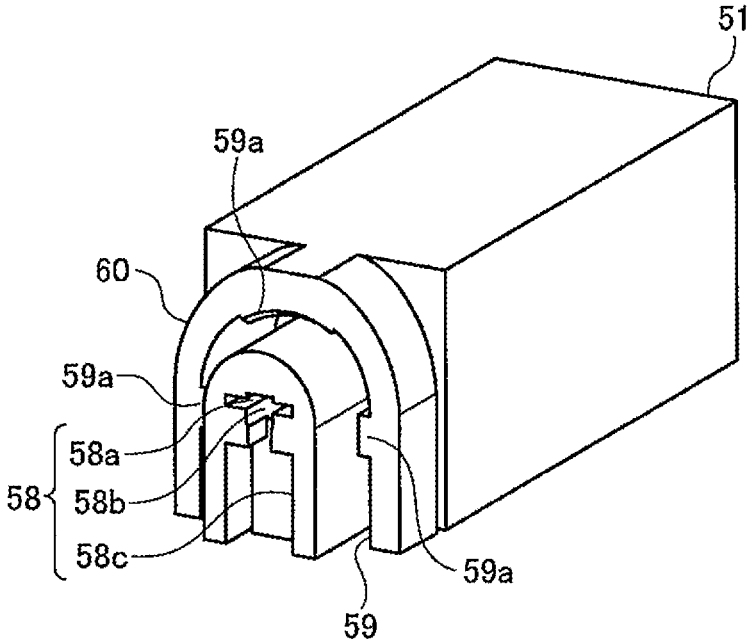


Fig.3

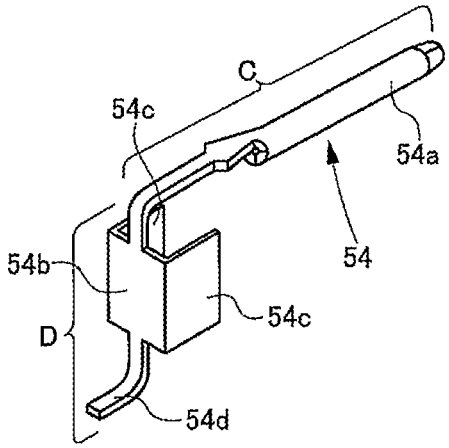



Fig.4

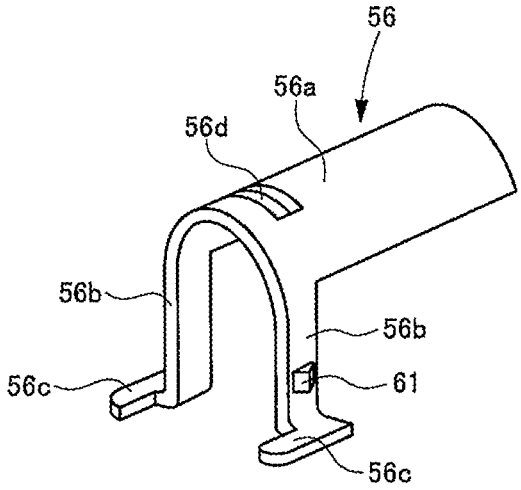



Fig.5

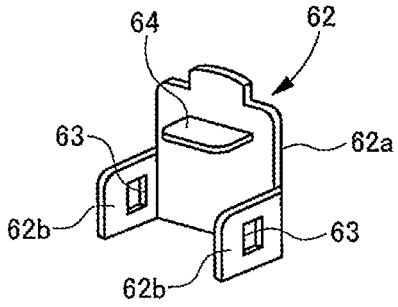
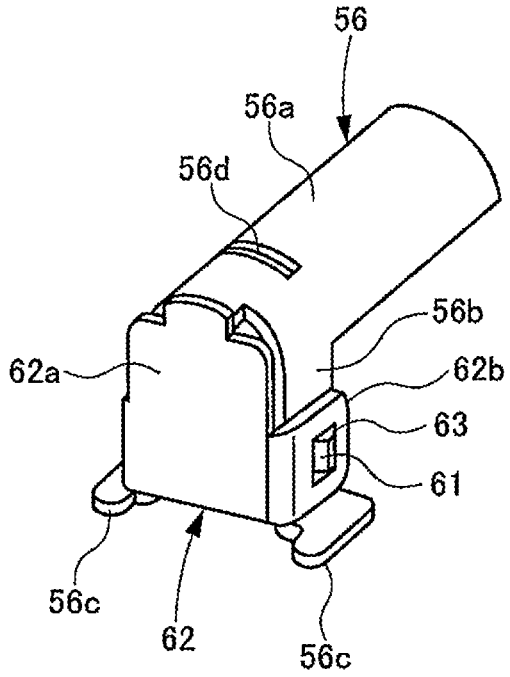


Fig.6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56b
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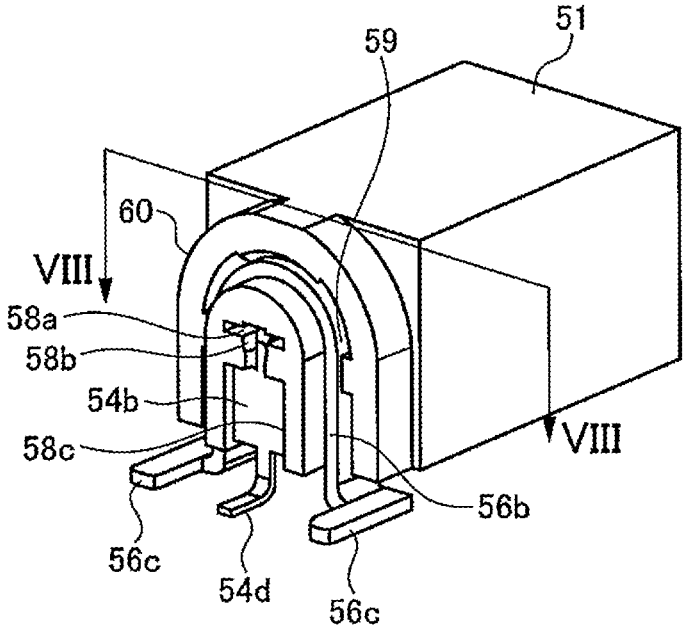
56c
62
56c

Fig.7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VIII
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VIII
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54d
56c

Fig.8

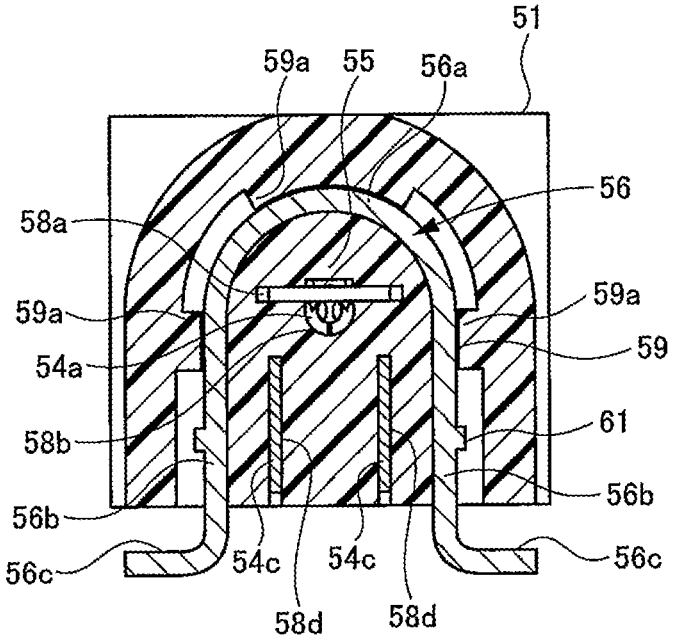
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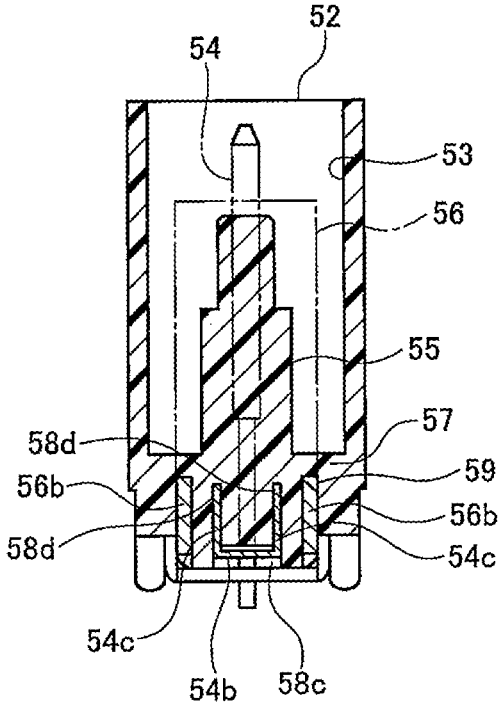
Fig.9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58c

Fig.10

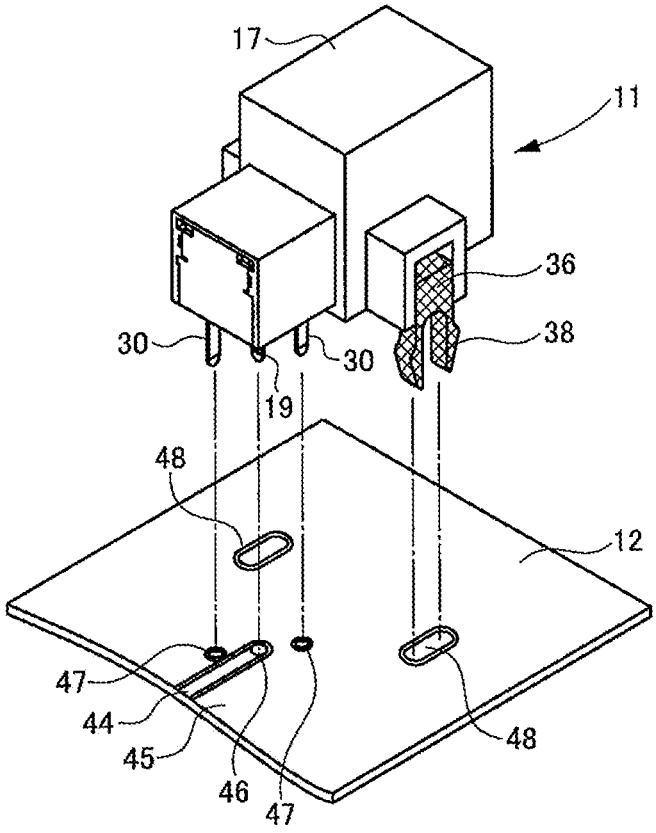
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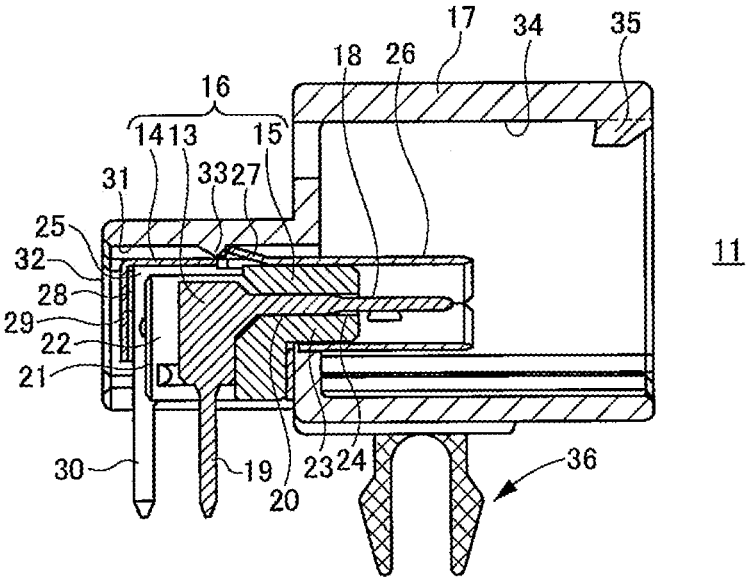
Fig.11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# CONNECTOR FOR A CIRCUIT BOARD

## TECHNICAL FIELD

The present invention relates to a connector for a circuit board connected to a coaxial connector.

## BACKGROUND ART

Usually, as a connector for a circuit board to which a coaxial connector is connected, is known a connector having an inner conductor terminal soldered and connected to a signal pattern of a printed circuit board, an outer conductor terminal soldered and connected to a ground pattern of the printed circuit board and an insulator part interposed between them and accommodated in a connector housing made of a resin (see patent literature 1). This connector for the circuit board will be described by referring to FIG. **10** and FIG. **11**.

In the connector **11** for the circuit board, a connector terminal **16**, is accommodated in the connector housing **17** made of a resin, which includes the inner conductor terminal **13** soldered and connected to the signal pattern on the printed circuit board, the outer conductor terminal **14** soldered and connected to the ground pattern on the printed circuit board and the insulator part **15** interposed between them. To the inner conductor terminal **13**, a signal wire of a shielded electric wire which is not shown in the drawing is connected to transmit a high frequency signal. The outer conductor terminal **14** is connected to a shield wire of the shielded electric wire to cover a periphery of the inner conductor terminal **13** and electromagnetically shield it.

The inner conductor terminal **13** is formed substantially in the shape of an inverted L in which a suspending part **19** is suspended downward from a base end of a pin shaped horizontal part **18** by punching an electrically conductive plate material. The base end side of the pin shaped horizontal part **18** has a diameter formed to be a little larger than that of an end side thereof and is provided with an engaging protrusion **20**.

The suspending part **19** is inserted into a through hole of the printed circuit board and connected to a desired signal pattern on the printed circuit board. Then, when the horizontal part **18** is connected to an inner conductor terminal of a mate side shield connector not shown in the drawing, an electric signal is delivered between the signal wire of the shielded electric wire and the signal pattern of the printed circuit board.

The insulator part **15** in which the inner conductor terminal **13** is accommodated is formed with an insulating material made of the resin having a prescribed dielectric constant and attached between the inner conductor terminal **13** and the outer conductor terminal **14** to insulate a part between them. The insulator part **15** has an accommodating chamber **22** having a vertically long opening surface **21** formed therein and a horizontal tube part **23** is extended and formed in a front side of the accommodating chamber **22**.

In the horizontal tube part **23**, an insert hole **24** into which the pin shaped horizontal part **18** of the inner conductor terminal **13** is inserted is opened and formed in a longitudinal direction and its rear side communicates with the accommodating chamber **22**. When the horizontal part **18** of the inner conductor terminal **13** is inserted into the insert hole **24**, the horizontal part is pressed in by the engaging protrusion **20** formed to be bulged in the base end side whose diameter is slightly larger than that of the end side. Thus, the inner conductor terminal **13** is held by the insulator part **15**.

The outer conductor terminal **14** is formed in a cylindrical shape by drawing an electrically conductive plate material and then bending the plate material by a press, so that the insulator part **15** can be accommodated in an inner accommodating chamber **25**. A front end part is a fitting part **26** fitted to an outer conductor terminal of the mate side shield connector. The end of the horizontal part **18** of the inner conductor terminal **13** inserted into the insert hole **24** of the insulator part **15** accommodated in the accommodating chamber **25** protrudes from the insulator part **15** and is arranged in the fitting part **26**.



On an upper surface of a central part of the outer conductor terminal **14**, an engaging piece **27** protrudes upward so as to be bent and deformed. In a rear edge of the upper surface of the outer conductor terminal **14**, a bent piece **29** of such a size as to cover a rear opening part **28** is extended and formed. The bent piece **29** is bent downward to cover the insulator part **15** accommodated in the accommodating chamber **25** of the outer conductor terminal **14** from a rear part and close the rear opening part **28**. Thus, a shielding performance of the connector **11** for the circuit board can be prevented from being deteriorated.

In a lower end of the rear part of the outer conductor terminal **14**, one pair of right and left connecting tabs **30** and **30** protrude downward at positions shifting in the longitudinal direction, are inserted into through holes of the printed circuit board and electrically connected to the ground pattern.

The connector housing **17** is integrally formed with an insulating resin and accommodates and fixes the connector terminal **16** in which the inner conductor terminal **13** is held in the insulator part **15** and the insulator part **15** is accommodated in the outer conductor terminal **14**.

In a rear part of the connector housing **17**, a terminal accommodating chamber **31** opened in the longitudinal direction is formed to pass through so that the outer conductor terminal **14** may be inserted from a rear opening surface **32**. On a ceiling surface of the terminal accommodating chamber **31**, an engaging protrusion **33** is formed with which the engaging piece **27** of the outer conductor terminal **14** is engaged to prevent the outer conductor terminal **14** from slipping out.

In a front part of the terminal accommodating chamber **31**, a hood part **34** whose front surface is opened is provided so that a front part of the mate side shield connector may be accommodated. On an upper end edge of the hood part **34**, a stopper **35** is provided to protrude with which a connector housing of the mate side shield connector is engaged. The fitting part **26** of the outer conductor terminal **14** protrudes from the terminal accommodating chamber **31** to the hood part **34**. The fitting part **26** can be fitted to the outer conductor terminal of the mate side shield connector accommodated in the hood part **34**.

On both side surfaces of the connector housing **17**, fixing members **36** which fix the connector **11** for the circuit board to the printed circuit board are formed integrally with the connector housing **17**.

As shown in FIG. **10**, on the printed circuit board **12**, the signal pattern **44** and the ground pattern **45** are formed under a state that the signal pattern and the ground pattern are insulated from each other. To the signal pattern and the ground pattern respectively, the through holes **46** and **47** are electrically connected. Then, the suspending part **19** of the inner conductor terminal **13** of the connector **11** for the circuit board and the one pair of right and left connecting tabs **30** and **30** of the outer conductor terminal **14** are respectively inserted into the through holes **46** and **47** of the printed circuit board **12**. At this time, ends of fixing parts **38** of the fixing members **36** formed integrally with the connector housing **17** are inserted into through holes **48** electrically conducted to the

ground pattern **45**. Thus, the ground pattern **45** of the printed circuit board **12** is connected to the outer conductor terminal **14**, and the signal pattern **44** is connected to the inner conductor terminal **13**, respectively.

## LITERATURE OF RELATED ART

### Patent Literature

Patent Literature 1: JP-A-2008-84561

## SUMMARY OF THE INVENTION

### Problems that the Invention is to Solve

The above-described usual connector for the circuit board has below-described problems to be solved.

Namely, when the inner conductor terminal **13** is formed in the shape of L as described above, it is difficult to cover an entire part of the inner conductor terminal **13** including the horizontal part **18**, a connecting part (a bent part) to the suspending part **19** and the suspending part **19** with the outer conductor terminal **14** so as to obtain an uniform electrostatic capacity from the viewpoint of a restriction to the form and size of the connector housing **17**. Thus, a mismatching of impedance is generated respectively in the parts of the connector for the circuit board, so that the impedance of the entire part of the connector is hardly set to a desired numerical value.

The present invention is devised by considering the above-described circumstances and it is an object of the present invention to provide a connector for a circuit board which can suppress a mismatching of impedance due to forms of an inner conductor terminal and an outer conductor terminal and can adjust the impedance to a desired numerical value.

### Means for Solving the Problems

In order to achieve the above-described object, a connector according to the present invention is characterized by below-described (1) to (2).

(1) A connector including:

an outer terminal connected to a ground pattern of a circuit board;

an inner terminal connected to a signal pattern of the circuit board;

an insulator part interposed between the outer terminal and the inner terminal and

a connector housing in which the outer terminal, the inner terminal and the insulator part are accommodated, wherein the outer terminal has side surface pieces extended toward the circuit board when the connector is attached to the circuit board and including end parts connected to the ground pattern, and the inner terminal has a horizontal part extended in parallel with the circuit board when the connector is attached to the circuit board and a suspending piece extended toward the circuit board from the horizontal part when the connector is attached to the circuit board and having an end part connected to the signal pattern and the suspending piece has impedance adjusting pieces opposed to the side surface pieces with prescribed spaces held thereto.

(2) A connector having the structure of the above-described (1), wherein a shield cover which can be attached to the outer terminal is further provided and the shield cover is opposed to at least a part of the suspending piece when the shield cover is attached to the outer terminal.

According to the connector having the structure of the above-described (1), since the impedance adjusting pieces of a previously calculated prescribed size are opposed to the side surface pieces so as to hold prescribed spaces to the side surface pieces, an electrostatic capacity to ground of the inner terminal to the outer terminal can be improved. Thus, for the impedance larger than a desired numerical value in an angular part in which the horizontal part is connected to the suspending part and a part in the vicinity of the suspending part, the impedance can be made to be the smaller than the desired numerical value in the vicinity of the impedance adjusting pieces. Accordingly, the impedance of an entire part of the connector can be adjusted to the desired numerical value.

Further, according to the connector having the structure of the above-described (2), since at least a part of the suspending piece of a previously calculated prescribed size is opposed to the shield cover so as to hold a prescribed space to the shield cover, the electrostatic capacity to ground of the inner terminal to the outer terminal can be improved.

### Advantage of the Invention

According to the present invention, a mismatching of impedance due to the forms of the inner conductor terminal and the outer conductor terminal can be suppressed. As a result, a high frequency performance of an entire part of the connector for the circuit board can be improved.

The present invention is briefly explained as described above. Further, when a mode for carrying out the invention described below will be read by referring to the attached drawings, a detail of the present invention will be more clarified.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view showing a connector for a circuit board according to one exemplary embodiment of the present invention.

FIG. **2** is a perspective view showing a housing of the connector for the circuit board according to the one exemplary embodiment of the present invention.

FIG. **3** is a perspective view showing an inner terminal of the connector for the circuit board according to the one exemplary embodiment of the present invention.

FIG. **4** is a perspective view showing an outer terminal of the connector for the circuit board according to the one exemplary embodiment of the present invention.

FIG. **5** is a perspective view showing a shield cover of the connector for the circuit board according to the one exemplary embodiment of the present invention.

FIG. **6** is a perspective view showing the outer terminal to which the shield cover is attached in the connector for the circuit board according to the one exemplary embodiment of the present invention.

FIG. **7** is a perspective view showing a state that the inner terminal and the outer terminal are attached to the connector housing in the connector for the circuit board according to the one exemplary embodiment of the present invention.

FIG. **8** is a sectional view taken along a line VIII-VIII in FIG. **7**.

FIG. **9** is a sectional view taken along a line IX-IX in FIG. **1**.

FIG. **10** is a perspective view showing a connecting structure of a usual shield connector for a board.

FIG. **11** is a sectional view of the shield connector for the board shown in FIG. **10**.

## MODE FOR CARRYING OUT THE INVENTION

Now, a connector for a circuit board according to one exemplary embodiment of the present invention will be described below by referring to FIG. **1** to FIG. **9**.

The connector for the circuit board according to the one exemplary embodiment of the present invention includes an inner terminal (an inner conductor terminal) soldered to a signal pattern on a circuit board (not shown in the drawing) to which the connector is attached, an outer terminal (an outer conductor terminal) soldered to a ground pattern on the circuit board, an insulator part interposed between the inner terminal and the outer terminal and a connector housing in which the outer terminal, the inner terminal and the insulator part are accommodated and to which a mate side connector (a coaxial connector, not shown in the drawing) is fitted.

The connector housing **51** of the above-described members is formed substantially in the shape of a rectangular parallelepiped as a molded product of a synthetic resin as shown in FIG. **2**. The insulator part **55** is also formed integrally and simultaneously with the same synthetic resin at the time of forming the connector housing **51**. As shown in FIG. **9**, the connector housing **51** has a connector fitting part **53** having an opening part **52** at one end part (a front part). The connector fitting part **53** has a hollow shape to fit the mate side connector (not shown in the drawing) thereto. The insulator part **55** is allowed to protrude in a direction of a central line in the hollow part. The inner terminal (shown by a chain line) **54** is fixed to a central part of the insulator part **55** under a state the inner terminal passes through the central part except its end part.

Further, the outer terminal **56** is fixed in the connector housing **51** so as to cover the inner terminal **54** with a prescribed space provided between them. The connector fitting part **53** and the insulator part **55** are designed so as to meet the form and size of the mate side connector.

On the other hand, a closed wall part **57** is formed in an opposite side to the above-described opening part **52** side of the connector housing **51** so as to close one end of the connector fitting part **53**. The closed wall part **57** has a protruding part **60** of a forward rear circular form (an inverted U shape) as shown in FIG. **2** in an outer side surface part. In the protruding part **60** side, an inner terminal accommodating hole **58** and an outer terminal accommodating hole **59** are provided. The inner terminal accommodating hole **58** is horizontally formed so as to pass through the closed wall part **57** from an end face side of the protruding part **60**. Further, the inner terminal accommodating hole **58** includes a slot **58***a* to which a protruding piece **64** of a shield cover **62** shown in FIG. **5** is inserted, a pin insert hole **58***b* to which a cylindrical round pin part **54***a* of the inner terminal **54** shown in FIG. **3** is inserted and a rectangular hole **58***c* and an insert hole **58***d* to which a wide part **54***b* and impedance adjusting pieces **54***c* of the inner terminal **54** are inserted.

Further, as shown in FIG. **8** and FIG. **9**, the slot **58***a* of the inner terminal accommodating hole **58** has such a form and depth as to be inserted by the protruding piece **64** of the shield cover **62**. The pin insert hole **58***b* has such a depth as to be inserted by the cylindrical round pin part **54***a* of the inner terminal **54** and allow the round pin part **54***a* to protrude forward from an end of the insulator part **55**. Further, the rectangular hole **58***c* has a depth into which the wide part **54***b* and the one pair of impedance adjusting pieces **54***c* of the inner terminal **54** can be inserted.

On the other hand, the outer terminal accommodating hole **59** is also horizontally formed so as to pass through the dosed wall part **57** from the end face side of the protruding part **60**. The outer terminal accommodating hole **59** has a form into which a semi-cylindrical piece **56***a* of the outer terminal **56** shown in FIG. **4** and one pair of side surface pieces **56***b* connected to lower edges of a rear end of the semi-cylindrical piece **56***a* can be inserted. Further, three guide protrusions **59***a* are arranged so as to protrude to a central direction of the outer terminal accommodating hole **59**. Thus, the outer terminal **56** can be smoothly inserted into the outer terminal accommodating hole **59** along the guide protrusions **59***a*, respectively.

As shown in FIG. **3**, the inner terminal **54** is formed in the shape of a crank as a whole and includes a horizontal part C and a suspending part D. The horizontal part C is a part extended in parallel with the circuit board when the connector according to the exemplary embodiment is attached to the circuit board. The suspending part D is a part extended toward the circuit board from the horizontal part C when the connector is attached to the circuit board and its end part is connected to the signal pattern of the circuit board. The horizontal part C has the round pin part **54***a* in the first half part. The round pin part **54***a* is inserted into a part of the slot **58***a* and the pin insert hole **58***b* shown in FIG. **7** and FIG. **8** and horizontally held by the connector housing **51**. The suspending part D has the rectangular wide part **54***b* of a large area in a part thereof and the substantially rectangular impedance adjusting pieces **54***c* connected to right and left ends of the wide part **54***b*. The wide part **54***b* and the impedance adjusting pieces **54***c* are bent at right angles to each other to form substantially a shape of U. Further, a circuit board connecting piece **54***d* is horizontally connected to a lower end of the suspending part D of a lower part of the wide part **54***b*. The circuit board connecting piece **54***d* is soldered to the signal pattern of the circuit board. The round pin part **54***a*, the wide part **54***b*, the impedance adjusting pieces **54***c* and the circuit board connecting piece **54***d* are obtained by press molding of an electrically conductive plate.

Further, in the inner terminal **54**, the round pin part **54***a* is inserted into the pin insert hole **58***b* of a rear surface of the closed wall part **57** shown in FIG. **2** and the impedance adjusting pieces **54***c* are inserted into the insert hole **58***d* from the rectangular hole **58***c* of the rear surface of the dosed wall part **57**. Further, the wide part **54***b* is similarly fitted to the rectangular hole **58***c* of the rear surface of the dosed wall part **57**. Thus, the inner terminal **54** is attached to the connector housing **51**.

On the other hand, the outer terminal **56** includes, as shown in FIG. **4**, the semi-cylindrical piece **56***a* and the one pair of side surface pieces **56***b* extended downward (toward the circuit board) at the one end of the semi-cylindrical piece **56***a*. The side surface pieces **56***b* hold a parallel state to each other. At lower ends thereof, somewhat short circuit board connecting pieces **56***c* are horizontally extended in opposite directions to each other. The circuit board connecting pieces **56***c* are soldered to the ground pattern on the circuit board (not shown in the drawing). Engaging pawls **61** respectively protrude on outer side surfaces of the side surface pieces **56***b*. The engaging pawls **61** have sizes and forms which can be fitted to engaging holes **63** provided in the shield cover **62** shown in FIG. **5**. Further, an engaging hole **56***d* is formed so as to cut out a part of the semi-cylindrical piece **56***a*. In the engaging hole **56***d*, when the outer terminal **56** is attached to the connector housing **51**, a protrusion provided in an inner wall of the insulator part **55** enters the engaging hole **56***d*. Thus, the outer terminal **56** is assuredly fixed to the connector housing **51**.

In the outer terminal **56**, an end part of the semi-cylindrical piece **56***a* is inserted to an entrance of the outer terminal accommodating hole **59** of the rear surface of the dosed wall

part **57** shown in FIG. **2** and the side surface pieces **56***b* are also respectively inserted into a part in the vicinity of the entrance part of the outer terminal accommodating hole **59**. Thus, the outer terminal **56** is attached to the connector housing **51**. A state that the inner terminal **54** and the outer terminal **56** are attached to the connector housing **51** in such a way is shown in a perspective view of FIG. **7** and sectional views of FIG. **8** and FIG. **9**.

As shown in FIG. **5**, the shield cover **62** includes a dosing plate **62***a* and engaging pieces **62***b*. To both sides of a lower part of the dosing plate **62***a*, the engaging pieces **62***b* are connected in directions orthogonal to the dosing plate **62***a*. The engaging holes **63** are respectively formed at substantially central parts of the engaging pieces **62***b* and engaged with the engaging pawls **61** provided in the outer terminal **56**. Thus, as shown in FIG. **6**, the shield cover is attached to the outer terminal **56** so that the shield cover may be prevented from slipping out. Further, the protruding piece **64** is supported on an upper position of the closing plate **62***a* under a cantilever state. The protruding piece **64** has a size and form which can be inserted into the slot **58***a* of the connector housing **51** shown in FIG. **2** and FIG. **7**.

As shown in FIG. **1**, the shield cover **62** is attached to be opposed to the rear surface of the closed wall part **57** of the connector housing **51** in which the inner terminal **54** and the outer terminal **56** are accommodated and the wide part **54***b* of the inner terminal **54**. This attachment is carried out by pushing the protruding piece **64** of the shield cover **62** to the slot **58***a* of the rear surface of the dosed wall part **57** and fitting the engaging holes **63** of the shield cover **62** to the engaging pawls **61** of the outer terminal **56** as shown in FIG. **4**. A fitting state of the engaging pawls **61** and the engaging holes **63** is shown in FIG. **6**.

In the connector for the circuit board having the above-described structure, a mismatching of impedance due to the forms of the inner conductor terminal and the outer conductor terminal can be adjusted by areas and spaces of the side surface pieces **56***b* of the outer terminal **56** and the impedance adjusting pieces **54***c* of the inner terminal **54** which are opposed to each other.

Namely, in the usual inner terminal which is not provided with the impedance adjusting pieces **54***c*, since an area of a part opposed to an outer terminal is small, an electrostatic capacity to ground of the inner terminal to the outer terminal in that part is low, so that high impedance arises. As compared therewith, in the present exemplary embodiment, since the impedance adjusting pieces **54***c* of a previously calculated prescribed size are opposed to the side surface pieces **56***b* of the outer terminal **56** so as to hold prescribed spaces from the side surface pieces, the electrostatic capacity to ground of the inner terminal **54** to the outer terminal **56** can be improved. Since an impedance Z is inversely proportional to an electrostatic capacity C ($Z=1/\omega C$), the impedance can be suppressed low to a previous value or smaller. Thus, for the impedance larger than a desired numerical value in an angular part in which the horizontal part C is connected to the suspending part D and a part in the vicinity of the suspending part D, the impedance can be made to be the smaller than the desired numerical value in the vicinity of the impedance adjusting pieces **54***c*. Thus, the impedance of an entire part of the connector for the circuit board of the present exemplary embodiment can be adjusted to the desired numerical value. Accordingly, a high frequency performance of the connector can be improved.

Further, in the connector for the circuit board having the above-described structure, the mismatching of impedance due to the forms of the inner conductor terminal and the outer conductor terminal can be also adjusted by areas and spaces of the wide part **54***b* of the opposed inner terminal **54** and the dosing plate **62***a* of the shield cover **62** attached to the outer terminal **56**. In the present exemplary embodiment, since the wide part **54***b* of a previously calculated prescribed size is opposed to the closing plate **62***a* of the shield cover **62** so as to hold a prescribed space to the closing plate **62***a*, the electrostatic capacity to ground of the inner terminal **54** to the outer terminal **56** can be improved.

As described in the connector according to the exemplary embodiment of the present invention, even when a part arises which has the impedance deviating from the desired numerical value due to the forms of the inner terminal and the outer terminal, the deviating part can be cancelled to adjust the impedance of the entire part of the connector to the desired numerical value. As a result, the high frequency performance of the connector can be improved.

The present invention is described in detail by referring to the specific exemplary embodiment, however, it is to be understood to a person with an ordinary skill in the art that various changes or modifications may be made without departing from the spirit and scope of the present invention.

This application is based on Japanese Patent Application (JPA No. 2010-160693) filed on Jul. 15, 2010, and contents thereof are incorporated herein as a reference.

## INDUSTRIAL APPLICABILITY

According to the connector of the present invention, the mismatching of impedance due to the forms of the inner conductor terminal and the outer conductor terminal can be suppressed. As a result, the high frequency performance of the entire part of the connector for the circuit board can be effectively improved.

## DESCRIPTION OF REFERENCE NUMERALS AND SIGNS

**51** . . . connector housing
**52** . . . opening part
**53** . . . connector fitting part
**54** . . . inner terminal
**54***a* . . . round pin part
**54***b* . . . wide part
**54***c* . . . impedance adjusting piece
**54***d* . . . circuit board connecting piece
**55** . . . insulator part
**56** . . . outer terminal
**56***a* . . . semi-cylindrical piece
**56***b* . . . side surface piece
**56***c* . . . circuit board connecting piece
**56***d* . . . engaging hole
**57** . . . closed wall part
**58** . . . inner terminal accommodating hole
**58***a* . . . slot
**58***b* . . . pin insert hole
**58***c* . . . rectangular hole
**58***d* . . . insert hole
**59** . . . outer terminal accommodating hole
**59***a* . . . guide protrusion
**60** . . . protruding part
**61** . . . engaging pawl
**62** . . . shield cover
**62***a* . . . closing plate
**62***b* . . . engaging piece
**63** . . . engaging hole
**64** . . . protruding piece

The invention claimed is:

1. A connector, comprising:

an outer terminal connected to a ground pattern of a circuit board;

an inner terminal connected to a signal pattern of the circuit board;

an insulator part interposed between the outer terminal and the inner terminal and

a connector housing in which the outer terminal, the inner terminal and the insulator part are accommodated;

wherein the outer terminal has side surface pieces extended toward the circuit board when the connector is attached to the circuit board and including end parts connected to the ground pattern, and the inner terminal has a horizontal part extended in parallel with the circuit board when the connector is attached to the circuit board and a suspending piece extended toward the circuit board from the horizontal part when the connector is attached to the circuit board and having an end part connected to the signal pattern and the suspending piece has impedance adjusting pieces opposed to the side surface pieces with prescribed spaces held thereto.

2. The connector according to claim 1, wherein a shield cover which can be attached to the outer terminal is further provided and the shield cover is opposed to at least a part of the suspending piece when the shield cover is attached to the outer terminal.

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